

NOTES ON *PROTEA* IN SOUTH AFRICA

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(*Compton Herbarium, Kirstenbosch*)

ABSTRACT

Two new species of *Protea*, *P. denticulata* and *P. vogtsiae* from the Cape Province are described, two new combinations are proposed and attention is drawn to the correct application of three other names in *Protea*.

UITTREKSEL

AANTEKENINGE OOR *PROTEA* IN SUID-AFRIKA

Twee nuwe *Protea*-spesies, *P. denticulata* en *P. vogtsiae* van die Kaap word beskryf, twee nuwe kombinasies word voorgestel en aandag word gevestig op die korrekte gebruik van drie ander name in *Protea*.

INTRODUCTION

During the course of revising *Protea* for the *Flora of Southern Africa*, it has become apparent that several as yet undescribed taxa exist. It has also been found that a number of names were incorrectly applied in the past while in other cases several familiar names will have to be relegated to synonymy and replaced by earlier epithets. Rather than deferring the publication of these necessary nomenclatural changes until the revision is complete, attention will be drawn to them in a series of miscellaneous notes published from time to time.

Protea denticulata Rourke, sp. nov.

P. scabrae R. Br. affinis, sed habitu fruticoso, caulibus erectis lignosis ad 1 m altis, foliis dense denticulatis, bracteis anguste ovatis, velutinis, carminis sordidis, marginibus distinctis badiis, receptacula anguste conico—acuminato, distinguitur.

Frutex ramosus, densus, ad 1 m altus. *Caules* erecti, crassi, lignosi, 1–1.5 cm in diam. *Folia* dense ascendentia, linearia-canaliculata, 15–25 cm longa, 5–8 mm lata; apex acuminatus, saepe uncinatus; pagina initio tricomatibus longa sericea, glabrescentes; indurata, asperis, dentibus corneis armata. *Inflorescentiae* ovoideae, 4–5 cm longae, 3.5–4 cm latae. *Receptaculum* anguste conicum-acuminatum, 1.5–2 cm altum. *Bractee* 6–7 seriatæ; bractee internae anguste oblongae vel lineares, 3–4 cm longae, 4–6 mm latae; bractee externae, anguste ovatae, 1.3–1.5 cm longae, 6–7 mm latae, velutinae, rufae-carminae sordidae;

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margines distinctos badios. *Perianthium* 2,5–3,5 cm longum, leviter adaxiale arcuatum; limbi lineares 1–1,2 cm longi, molliter sericei; apices acuminati criniti; unguis glabri, sed margines interiores tricomatibus longis sericeis fimbriatis. *Stylus* adaxiale arcuatus, 2,5–3,5 cm longus. *Stigma* lineare—filiforme, 6 mm longum.

A low, dense, much branched shrub to 1 m in height, up to 2 m in diam. *Stems* developing from a subterranean rootstock; stout and woody 1–1,5 cm in diam, erect or slightly twisted, covered with prominent leaf scars. *Leaves* densely ascending, linear-canaliculate, 15–25 cm long, 5–8 mm wide, apex acuminate, often uncinat, petiolar region terete; covered with soft silky trichomes at first, becoming glabrous with a few trichomes on the channelled surface; texture hard and wiry, surface densely covered with horny denticles. *Inflorescences* sessile, ovoid, 4–5 cm long, 3,5–4 cm wide. *Involucral receptacle* narrowly conic—acuminate, 1,5–2 cm in height, 0,8–1,3 cm wide at base. *Involucral bracts* 6–7 seriate: the innermost narrowly oblong to linear, 3–4 cm long, 4–6 mm wide, apex rounded, concave, margins thickly fimbriate; thereafter grading from oblong to narrowly ovate of the outer series, 1,3–1,5 cm long, 6–7 mm wide; outer surface of bracts dull reddish-carmine, covered with a thick velutinous indumentum; bract margins sharply delimited, chestnut brown. *Perianth* 2,5–3,5 cm long, slightly curved adaxially; limbs linear, 1–1,2 cm long, softly sericeous, apices acuminate, crinite; claws glabrous on outer surface but thickly fringed with long silky trichomes on the inner margins; tube glabrous, 0,8–1 cm long. *Anthers* 4, subsessile, terminated by a sagittate apical boss. *Style* adaxially arcuate, 2,5–3,5 cm long, tapering subterminally. *Pollen presenter* linear-filiform, 6 mm long, scarcely differentiated from the style. *Hypogynous scales* irregularly ovate, 1 mm long.

Diagnostic Characters: *P. denticulata* is allied to *P. scabra* R. Br. from which it may readily be distinguished by its shrubby growth habit with stout, erect, woody stems, up to 1 m in height. It may further be distinguished by the heavily denticulate leaves, the narrowly ovate, dull reddish-carmine, velutinous involucral bracts with their distinctive chestnut-brown margins, and the narrowly conic-acuminate involucral receptacle.

Type Material: North slopes of the Potberg at the farm Diepkloof, 19/9/1973, J. P. Rourke 1401 (NBG holo.; PRE, STE, K, MO, S, iso.).

A specimen collected on the Potberg by Dr M. R. Levyns in 1947 is the earliest record of this species known at present. Subsequent records are likewise all from the Potberg and it is now clear that *P. denticulata* is confined to the Potberg range, an isolated block of Table Mountain Sandstone which protrudes above the Bokkeveld Shales of the southern Cape coastal plain near the mouth of the Breede River. *P. denticulata* occurs in the foothills of this sandstone

"island" in north, south, east and west facing situations at elevations ranging from 120–300 m.

Where the veld has not been burnt for a number of years, the shrubby growth habit which is so characteristic of this species, is developed to its fullest extent, most mature plants reaching a metre or more in height. Repeated burning however, results in shorter stems, 30–50 cm in height, being produced from the subterranean rootstock.

The flowering period is relatively well defined; from mid-August to mid-October. By the end of October most of the inflorescences have faded and entered the fruiting stage.

SPECIMENS EXAMINED

CAPE PROVINCE—3420 (Bredasdorp): Diepkloof, Potberg, (-BC), 24/9/1966, *Williams* 910 (NBG); Between Malagas and Cape Infanta, 9/10/1959, *Middelmann* s.n. (NBG 82631); Potberg, 2/12/1965, *Williams* 639 (NBG); Diepkloof farm, hills on north side of Potberg 24/9/1966, *Rourke* 606 (NBG); Potberg, flats and lower slopes, 12/11/1954, *Rycroft* 1737 (NBG); North slopes of the Potberg at the farm Diepkloof, 19/9/1973, *Rourke* 1401 (NBG); Potberg, stony flats at south base of peak, 19/9/1954, *Esterhuysen* 23351 (BOL); Hamerkop, Potberg range, 5/10/1947, *Levy* 8432 (CT).

Protea vogtsiae Rourke, sp. nov.

Habitus laxis caespitosus, folia glauca, anguste oblanceolata vel spatulata, 12–25 cm longa, 1–3 cm lata, basi in petiolum gradatim decrescentia, et limbi perianthii dense lanati, *P. vogtsiae* ex specierum affinium dividunt.

Fruticulus nanus, laxis caespitosus, 20–50 cm in diam., 20–25 cm altus. *Caules* hypogaei, horizontaliter extendentes. *Ramuli* caespites terminales foliorum ferentes. *Folia* anguste oblanceolata vel spatulata, 12–25 cm longa, 1–3 cm lata, basi in petiolum gradatim decrescentia, glauca, obtusa, raro subacuta, pagina leviter granulata. *Inflorescentiae* globosae cyathiformes 3.5–4 cm in diam.; gemmae conicae ovatae. *Receptaculum involucre* 1.5–2 cm in diam., leviter convexum. *Bractee involucre* 4–5 seriata. Series intima oblonga spatulata, 3–3.5 cm longa, 1 cm lata, apices rotundatos concavos. Series externa, ovata vel late ovata, 7–15 mm longa, 7–10 mm lata, obtusa. Pagina externa sparsa sericea, glabrescens, viridi-flava, sordida-carmina suffusa. *Perianthium* 3–3.5 cm longum, glabrum, praeter perianthium limbum manifeste lanatum ad apicem. *Perianthium* limbi lineares, acuminati, glabri sed apices dense lanatos. *Stylus* 2.5–3 cm longus, arcuatus adaxialis contractus terminalis, leviter compressus. *Stigma* peranguste lineare vel filiforme, 5–6 mm longum, compressum, longioribus sulcatum. *Squamulae hypogynae* ovatae vel oblongae, 1.5 mm longae interdum bifidae.

Dwarf caespitose shrublet forming rather loose tufts 20–50 cm in diam., 20–25 cm in height. *Stems* subterranean, spreading horizontally, bearing alternate, acute scales up to 5 mm long. *Flowering shoots* terminating the subterranean stems, 5–7 mm in diam., the shoots producing a crown of spirally arranged leaves at the point of emergence from the soil. *Leaves* narrowly oblanceolate to spatulate, 12–25 cm long, 1–3 cm wide, tapering to a distinct carmine tinted petiolar region; apex obtuse, very rarely subacute; glaucous, surface slightly granulate. *Inflorescences* ovoid to globose, cyathiform, 3,5–4 cm in diam. Inflorescence buds conic acute. *Involucral receptacle* 1,5–2 cm in diam., slightly convex. *Involucral bracts* 4–5 seriate, the innermost series oblong-spatulate, 3–3,5 cm long, up to 1 cm broad, apex rounded, concave, broadly obtuse; outer series ovate to broadly ovate 7–15 mm long, 7–10 mm wide, obtuse; outer surface of bracts minutely sericeous, becoming glabrescent to glabrous, margins minutely fimbriate; yellow-green suffused with dull carmine, more uniformly carmine in some specimens. *Perianth* 3–3,5 cm long, fairly straight in bud, outer surface glabrous except for the thickly lanate apices of the perianth limbs. Adaxial perianth sheath 4 mm wide proximally, tapering to almost filiform below the limbs, minutely puberulous along inner margins. Limbs 8–9 mm long, linear, glabrous or very sparsely puberulous for the greater part of their length, apices acuminate, thickly lanate. *Anthers* 4, linear, 5 mm long, terminating in an ovoid-saggitate apical boss. *Style* adaxially curved 2,5–3 cm long, slightly compressed longitudinally, tapering subterminally. *Pollen presenter* linear-filiform, 5–6 mm long, flattened, longitudinally grooved, apex obtuse. *Hypogynous scales* ovate to oblong, 1,5 mm long occasionally bifid.

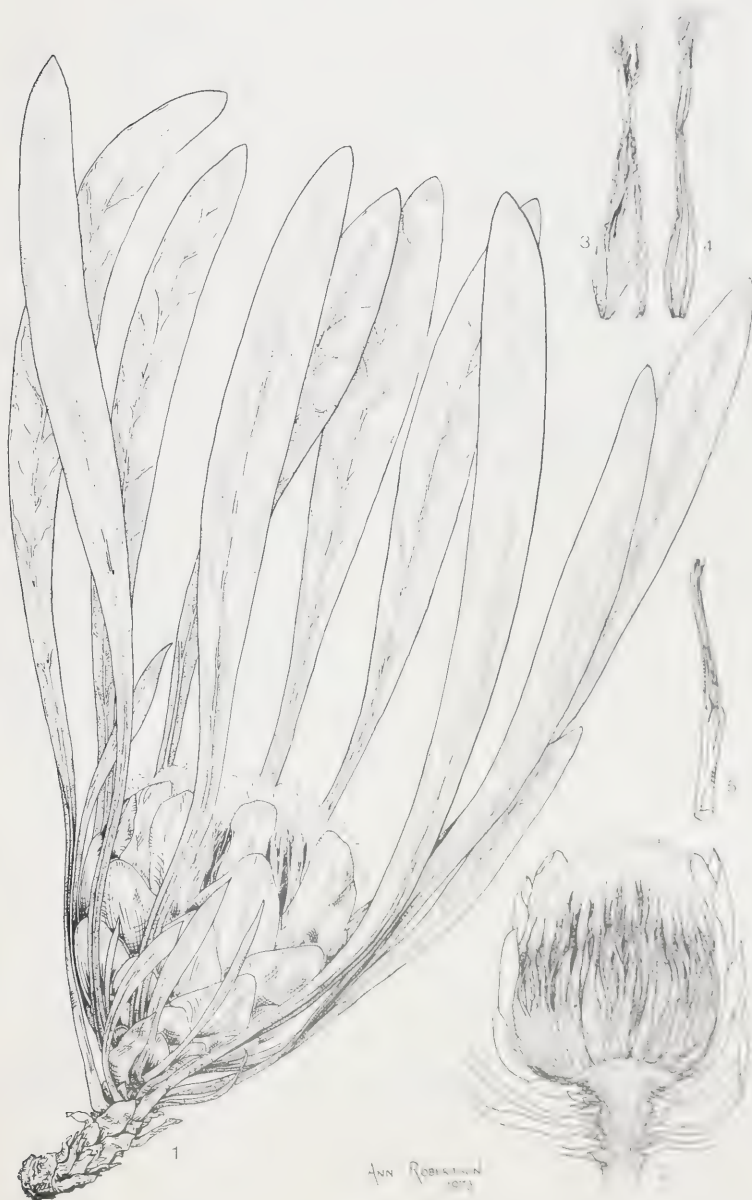
Diagnostic Characters: The loose, open, tufted growth habit, the glaucous, narrowly oblanceolate to spatulate leaves, 12–25 cm long, 1–3 cm wide, tapering to a distinct petiolar region and the thickly lanate apices of the perianth limbs at once distinguish *P. vogtsiae* from related taxa. Prior to anthesis, the conic-acute inflorescence bud with a prominently projecting white beard is a very distinctive feature of this species.

Type Material: Kouga Mountains, on the lower south slopes of Saptoukop above the farm Ouplaas, 14/8/1973, 1 100 m ($\pm$ 3 500 ft), *J. P. Rourke 1396* (NBG, holo.; PRE, STE, K, MO, S, iso.).

Few collections of *P. vogtsiae* have ever been made, that of Dr E. J. Markötter in 1935 being the first recorded collection of this species. This most distinct and elegant little species is named in honour of Dr Marie M. Vogts who has studied

FIG. 1.

Protea vogtsiae. 1, Flowering shoot, life size; 2, inflorescence in half section, life size; 3, perianth at anthesis showing abaxial perianth segment separating—lateral view, $\times$ 1,5; 4, perianth just prior to anthesis—adaxial view, $\times$ 1,5; 5, pollen presenter, $\times$ 5.



Protea for many years and whose enthusiasm and encouragement led me to enquire more deeply into the taxonomy of this fascinating group of plants.

P. vogtsiae occurs in a relatively small area at the eastern end of the Longkloof. Here it is mainly confined to the Kouga and western Baviaanskloof mountains, where its range extends from Hoopsberg in the west to Kouga Peak in the east. Scattered populations also occur on the north slopes of the Outeniqua range in the vicinity of Misgund and Haarlem. Mature plants may be from 20–50 cm in diameter. They form loose clumps with tufts of leaves developing at ground level from a very divaricate, horizontally spreading, subterranean branch system. A high degree of fire resistance characterises this species. New shoots develop from the subterranean branch system if the aerial parts are burnt off in a veld fire. Populations have been recorded at elevations of 1 000–1 500 m (3 500–5 000 ft) on rocky slopes of Table Mountain Sandstone. Within most populations a certain degree of variation in the colour of the involucre bract is evident. In some individuals the bracts are greenish-yellow, irregularly suffused with dull carmine while in others the bracts are a uniformly dull carmine to claret shade. Flowering takes place from mid-August until November but is clearly dependent on moisture availability during the winter and spring months. (Fig. 1).

SPECIMENS EXAMINED

CAPE PROVINCE—3323 (Willowmore): Hoopsberg, lower south slopes (-CB), 12/3/1966, *Rourke 408* (NBG); Haarlem, Longkloof, south side of a koppie, 11/7/1935, *E. J. Markötter s.n.* (STE 24553); Van Niekerk Heights, above Misgund Oos (-CD), 17/8/1971, *Hardick 60* (NBG); Misgund, Longkloof (-CD), 6/7/1963, *Williams s.n.* (NBG 69618); south slopes of Saptoukop above Diepte van Ellende, near Bo Kouga (-DA), 1/8/1968, *Williams 1215* (NBG); Kouga Mountains, on the lower south slopes of Saptoukop above the farm Ouplaas (-DA), 14/8/1973, *Rourke 1396* (NBG, PRE, STE, K, MO, S); Kouga mountains near Smutsberg (-DB), 4/7/1954, *H. C. Taylor 1280* (NBG); Kouga mountains, nek north of Smutsberg (-DB), 18/9/1973, *Oliver 4605* (STE). —3324 (Steytlerville): Summit of Kouga Mountain, (-CA) 20/9/1953, *H. C. Taylor 906* (NBG).

CHANGES IN NOMENCLATURE

Attention is drawn to the following name changes in *Protea*. Two new combinations are proposed and the correct usage of three other names is indicated.

Protea scolopendriifolium (Salisb. ex Knight) Rourke, comb. nov. *Erodendrum scolopendriifolium* Salisb. ex Knight, Cult. Prot.: 43 (1809)—basionym. Type: "On the arid high ground, Winterhoek," Oct., *Niven 23* (K, holo.!).

Protea scolopendrium R. Br. in Trans. Linn. Soc. Lond. **10**: 94 (1810); Meisn. in DC., Prodr. **14**: 243; Phill. & Stapf in Fl. Cap. **5**: 597 (1912). Type: Wintershoek, *Roxburgh 13* (BM, holo.!).

Protea scolopendrina St.-Lager in Ann. Soc. Bot. Lyon. **7**: 132 (1880)—nom. nud.

Protea holosericea (Salisb. ex Knight) Rourke, comb. nov. *Erodendrum holosericeum* Salisb. ex Knight, Cult. Prot.: 40 (1809)—basionym. Type: "Procumbent plant, alpine dry rocky places, Wilde River holosericeum Ms", in herb. Salisbury (K, holo.!).

Protea patens R. Br. in Trans. Linn. Soc. Lond. **10**: 82 (1810); Meisn. in DC., Prodr. **14**: 232 (1856); Phill. & Stapf in Fl. Cap. **5**: 568 (1912). Type: Based on same collection as above, "In Africa australis montibus saxosis prope Wilde River", *Niven* (in herb. Hibbert—not traced).

Protea speciosa (L.) L. var *patens* Andr. Bot. Rep. t 543 (May, 1809).

Both Brown and Salisbury cite Andrews' plate number 543 in the *Botanist's Repository* in their descriptions and both authors also cite Niven's collection from "Alpine dry rocky places, Wilde River." Although their respective epithets were based on the same collection, only the type of Salisbury's name has been traced. This specimen at Kew is clearly annotated in Salisbury's hand with the word "Holosericeum ms". (Fig. 2).

Mystery surrounded the identity of this species for a long time as for over 150 years it was known only from the type specimen and Andrews' plate. Moreover, the type locality could not be visited as it was impossible to determine the precise position of the Wilde River which could have been anywhere in the Western Cape. No such locality could be traced on either old or modern maps.

In September 1965 Miss E. E. Esterhuysen of the Bolus Herbarium collected what she considered to be a small form of *Protea barbigera* Meisn. on Sawedge Peak, near Worcester, C.P. Some years later, I had the opportunity of examining her specimens from this site and comparing them with the type specimen of *Erodendrum holosericeum* Salisb. ex Knight, which was then on loan to the Compton Herbarium from Kew. It was at once evident that Miss Esterhuysen's material (E. Esterhuysen 31161) was conspecific with *Erodendrum holosericeum* Salisb. ex Knight. Also, while studying a detailed map of Sawedge Peak, it was observed that the farm at the north west base of the Rabiesberg-Sawedge Peak complex was named "Wilgerivier". Many of Niven's collecting localities on his field tickets are phonetically spelled or have their spellings so distorted (e.g. Jackall Flyberg = mountain at Jakkalslei) that it is not inconceivable that Wilde River as recorded by Niven is a corruption of Wilgerivier. The fact that Niven also collected the very narrow-leaved form of *Protea canaliculata* (Aubl.) A. Wilde River adds weight to the argument as this particular form is very localized

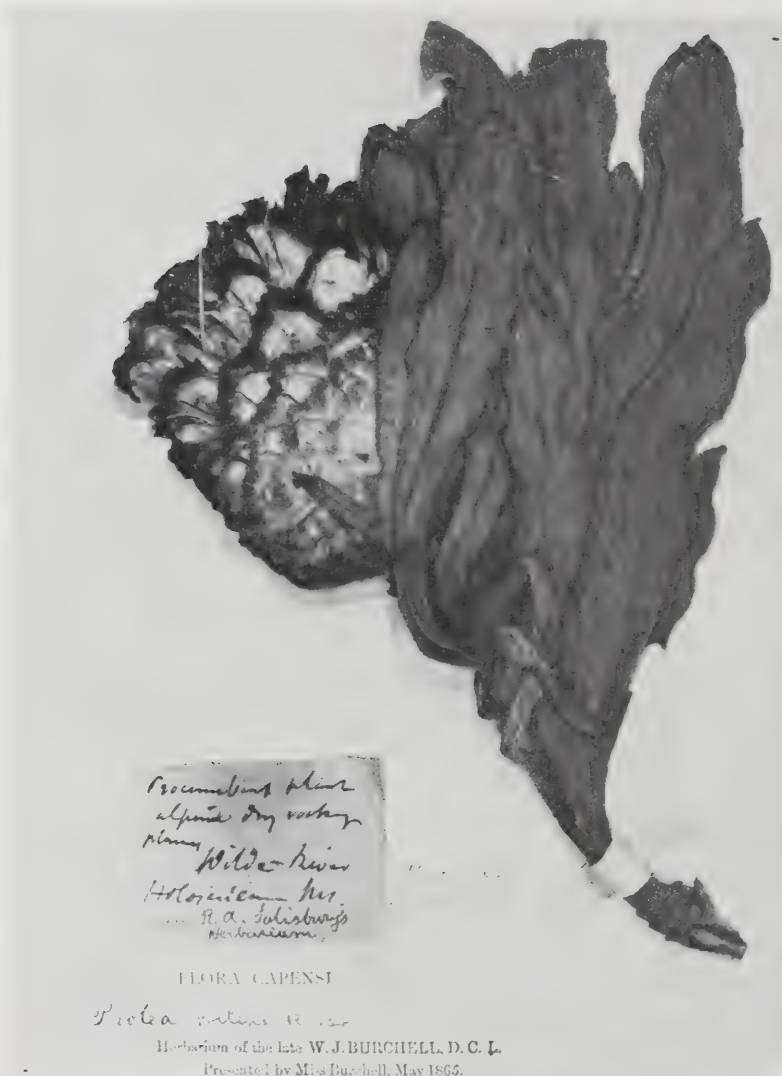


FIG. 2.

Type specimen of *Protea holosericea*, herbarium of the Royal Botanic Gardens, Kew.

in the Sawedge Peak—Koo—Montagu area and could not have been collected elsewhere. It is therefore my considered opinion that the site on Sawedge Peak from which Esterhuysen 31161 was collected in 1965 could, in all probability, be the same as that visited by Niven at least 160 years before.

SPECIMENS EXAMINED

CAPE PROVINCE—3319 (Worcester): Sawedge Peak, east of Keeromsberg (-DA), Sept., Esterhuysen 31161 (BOL, NBG); Alpine dry rocky places, Wilde River, Niven *s.n.* (K).

Protea acuminata Sims, in Curtis's bot. Mag.: t. 1694 (1814); Poir., Encycl. Meth. Bot. Suppl. 4: 562 (1816); Roem & Schult., Syst. Veg. 3: 351 (1818). Type: Curtis's bot. Mag. t. 1694.

Protea cedromontana Schltr. in Bot. Jb. 27: 109 (1899); Phill. & Stapf in Fl. Cap. 5: 592 (1912). Type: Ezelbank, in sabulosis, 2/9/1896, Schlechter 8808 (B, lecto.!; K, SAM, PRE, iso!).

The colour plate by Sydenham Edwards in Curtis's Botanical Magazine clearly and unambiguously depicts a species of *Protea* hitherto known as *P. cedromontana* Schltr. The painting was made from a specimen flowering in Lee and Kennedy's Nursery, Hammersmith, in March 1812. It is difficult to see why Phillips and Stapf listed *P. acuminata* Sims as an imperfectly known species in their account of *Protea* for the *Flora Capensis*. One can only assume that, had they been acquainted with living material, this oversight would not have occurred.

Protea subulifolia (Salisb. ex Knight) Rourke, comb. nov. *Pleuranthe subulifolia* Salisb. ex Knight, Cult. Prot.: 50 (1809)—basionym. Type: Mountains near Rivier Zonder End, Niven *s.n.* (K, holo!).

Protea virgata Andr., Bot. Rep. t. 577 (Sept. 1809), non Thunb. (1803). Type: Plate 577 in Andr., Bot. Rep.

Pleuranthe ericaefolia Salisb. ex Knight, Cult. Prot.: 50 (1809). Type: Swellendam, Masson (not traced).

Protea acerosa R. Br. in Trans. Linn. Soc. Lond. 10: 95 (1810); Edwards, Bot. Reg. t. 531 (1819); Meisn. in DC., Prodr. 14: 246 (1865); Phill. and Stapf in Fl. Cap. 5: 607 (1912). Type: Africa australis, Masson *s.n.* (BM, holo!).

Protea abietina Buek. ex Meisn. in DC., Prodr. 14: 246 (1856)—nom. nud.

Despite the fact that no type material of *Pleuranthe ericaefolia* has yet been traced, the inclusion of this name in the synonymy of *P. subulifolia* is considered justified as the description clearly refers to the short leaved form of this species.

Protea canaliculata Andr., Bot. Rep. t. 437 (1806). Type: Plate 437 in Andr., Bot. Rep.

Erodendrum paeoniflorum Salisb. ex Knight, Cult. Prot.: 46 (1809)—nom. superf. Type: As for *P. canaliculata*.

Protea harmeri Phill. in Kew. Bull **1911**: 83 (1911); Phill. & Stapf in Fl. Cap. **5**: 593 (1912); Phill in Flower. Pl. S. Afr. **5** t. 192 (1925). Type: Hills near Matjiesfontein, Aug. 1905, *S. F. Hamer s.n.* (K, holo.!)

Brown and several succeeding monographers of *Protea* misinterpreted Andrews' plate and description which depict and describe a species with an erect growth habit and deep crimson to claret coloured bracts. The error is attributable to Robert Brown who, in his account of *P. canaliculata* Andr., cites a specimen of the narrow leaved form of *Protea tenax* (Salis.) R. Br. collected by Niven in the Longkloof. Subsequent authors, assuming Brown's identification of the Niven specimen to be correct, named future collections by matching them against this specimen instead of comparing them with the type illustration by Andrews. The name *Protea canaliculata* Andr., should now be applied to the species presently known as *P. harmeri* Phill.